1	1.	A computer system comprising:
2		a memory;
3		a register file coupled to the memory through a memory channel, the register file
4		to store data for one or more procedures in one or more frames, respectively; and
5		a register stack engine to monitor activity on the memory channel and to transfer
6		data between selected frames of the register file and the memory responsive to available
7		bandwidth on the memory channel.
1	2.	The computer system of claim 1, wherein the memory includes a backing store and the
2	registe	er stack engine transfers data between the selected frames and the backing store.
1	3.	The computer system of claim 1, wherein a portion of the register file is organized as a
2	registe	r stack.
1	4.	The computer system of claim 3, wherein the register stack engine includes a first pointer
2	to indi	cate a first location in a current frame of the register stack.
1	5.	The computer system of claim 4, wherein the register stack engine includes a second
2	pointer	to indicate an oldest dirty register in the register stack.

1	6. The computer system of claim 5, wherein the register stack engine includes a third		
2	pointer to indicate an oldest clean register in the register stack.		
1	7. The computer system of claim 1, wherein registers of the register file are mapped to a		
['] 2	current frame and an inactive frame, and the register stack engine transfers data between registers		
3	in the inactive frame and the backing store.		
1	8. The computer system of claim 7, wherein the registers mapped to the inactive frame are		
2	designated as clean or dirty, according to whether data stored in the registers has or has not been		
3	spilled to the memory.		
1	9. The computer system of claim 8, wherein the memory includes a backing store.		
1	10. The computer system of claim 9, wherein the register stack engine transfers data from a		
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2	dirty registers to a corresponding location in the backing store when bandwidth is available on		
3	the memory channel.		
1	11. The computer system of claim 9, wherein the register stack engine transfers data to a		
2	clean register from a corresponding location in the backing store when bandwidth is available on		
3	the memory channel.		

1	12.	A method for managing data in a register stack comprising:
2		designating registers in the register stack as clean or dirty, according to whether
3		data in the registers has been spilled to a backing store;
4		monitoring operations on a memory channel; and
5		spilling data from a current oldest dirty register to the backing store when capacity
6		is available on the memory channel.
1	13.	The method of claim 12, further comprising updating a first pointer to indicate a new
2	oldest	dirty register when data is spilled from the curent oldest dirty register.
1	14.	The method of claim 12, further comprising filling data from the backing store to a
2	curren	t oldest clean register when capacity is available on the memory channel.
l	15.	The method of claim 14, further comprising updating a second pointer to indicate a new
2	oldest	clean register when data is filled to the curent oldest clean register.
1	16.	A computer system comprising:
2		a memory system;

- a register file to store data for an active procedure and one or more inactive
 procedures; and
- a register stack engine to transfer data between registers associated with the one or more inactive procedures and the memory system, responsive to available bandwidth to the memory system.
 - 1 17. The computer system of claim 16, wherein the computer system further comprises a
 - 2 load/store unit and the register stack engine monitors the load/store unit to determine available
 - 3 bandwidth to the memory system.
 - 1 18. The computer system of claim 16, wherein the register stack engine includes a first
 - 2 pointer to track a next inactive register to spill to the memory system and a second pointer to
 - 3 track a next inactive register to fill from the memory system responsive to available bandwidth.
 - 1 19. The computer system of claim 16, wherein the register stack engine transfers data for
 - 2 inactive procedures responsive to a mode status indicator.
 - 1 20. The computer system of claim 19, wherein the register stack engine operates in a lazy
 - 2 mode, a store intensive mode, a load intensive mode, or an eager mode according to the mode
 - 3 status indicator.

- 1 21. The computer system of claim 19, wherein the mode status indicator is set under software
- 2 control responsive to a type of application to run on the computer system.